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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,917	06/11/2001	Seetharama C. Deevi	033018-076	1114
21839	7590	01/02/2004	EXAMINER	
BURNS DOANE SWECKER & MATHIS L L P			GRIFFIN, WALTER DEAN	
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ALEXANDRIA, VA 22313-1404			PAPER NUMBER	

1764

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/876,917

Applicant(s)

DEEVI, SEETHARAMA C.

Examiner

Walter D. Griffin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 23, 24 and 26-28 is/are rejected.
- 7) ☒ Claim(s) 22, 25 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

Claim 12 is objected to because of the following informalities: In the context of claim 12, the words "yttria", "ceria", and "zirconia" appear to be incorrect. The correct words should apparently be "yttrium", "cerium", and "zirconium". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-20 are indefinite because the expression "the lining" in line 3 of claim 1 lacks proper antecedent basis. Antecedent basis is provided for the expression "the first layer".

Claims 20 and 28 are indefinite because it is unclear how the intermediate layer can have a coefficient of thermal expansion between that of the first and second layers when the coefficient of thermal expansion for the first and second layers is substantially the same.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 8, 21, 23, 24, 26, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Meyer (US 6,329,079 B1).

The Meyer reference discloses a cracker unit tube with a steel shell and a liner formed from an iron-aluminum alloy. The tube may be formed by extrusion. The steel shell may be made from Inconel 803 alloy. The tube retards the deposit of carbon along its interior surface. The shell and liner would appear to necessarily have similar coefficients of thermal expansion since Meyer discloses that the tube has the strength to withstand stresses imposed by thermal expansion. The coke prevention ability of the tubes of Meyer would necessarily be similar to that which is claimed since the claimed tubes and tubes of Meyer are lined with similar iron-aluminum alloys. See column 2, line 24 through column 4, line 27.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 6,329,079 B1).

As discussed above, the Meyer reference does not disclose the reforming of a hydrocarbon.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Meyer by reforming a hydrocarbon because Meyer discloses that the tubes are well suited for converting hydrocarbons. Therefore, one of ordinary skill in the art would expect any high temperature hydrocarbon conversion to be successfully achieved in the disclosed tubes.

Claims 9, 20 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (US 6,329,079 B1) in view of Mendez Acevedo et al. (US 6,475,647 B1).

As discussed above, the Meyer reference does not disclose the use of an intermediate layer or the use of the alloy in the form of a nanocrystalline intermetallic powder.

The Mendez Acevedo reference discloses the use of an interlayer between the steel of the tube and an iron-aluminum alloy layer. The layer may also be applied to the tube as a powder. See column 3, line 63 through column 4, line 21.

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the tubes of Meyer by utilizing an intermediate layer as suggested by Mendez Acevedo because the intermediate layer will scatter nitrides and carbides to avoid forming an undesirable continuous nitride or carbide layer that would jeopardize the mechanical integrity of the iron-aluminum layer.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the tubes of Meyer by having the alloy in the form of a powder as suggested by Mendez Acevedo because an effective layer will result that will provide the desired effect.

Allowable Subject Matter

Claims 22, 25, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 4-7, 11-19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:
The primary reason for indicating allowable subject matter is that the prior art of record does not disclose or suggest an iron aluminide alloy including at least 2 volume percent of transition metal oxides as in claims 4-6 and does not disclose the composition as in claims 7, 11-19, 22, 25, and 29.

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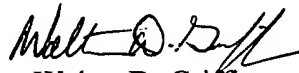
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art not relied upon discloses iron-aluminum alloys and their uses.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is (571) 272-1447. The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.


Walter D. Griffin
Primary Examiner
Art Unit 1764

WG
December 22, 2003